

NEW FEDERAL RESERVE INDEX OF INDUSTRIAL PRODUCTION

The August issue of the Federal Reserve Bulletin presents a complete revision of the Board's index of industrial production, designed to provide a broader and more accurate measure of current changes in the physical volume of industrial output. For all of the industry groups and individual industry series which will hereafter be carried in the Survey, there is shown the record by months from 1936 to date and annual indexes from 1923 to date. The new index was not available when the 1940 edition of the Supplement to the Survey, now ready for distribution, went to press. It is, therefore, set up in this issue in the form used in the Supplement so that it can be filed with that volume for reference purposes.

Excerpts from the article by Maxwell R. Conklin, Associate Economist of the Division of Research and Statistics of the Board of Governors of the Federal Reserve System, pointing out the major differences between the old and the new indexes, follow:

The scope of the new index, as of the old, is limited to the production of manufacturers and miners. Neither index covers production of other types of goods and services. Extensive modifications have been made, however, and the behavior of the new index, while broadly similar, is different in some important respects. The principal difference is that the new index shows much more growth in this country's industrial output than was shown by the former index. Many new series were developed to obtain coverage in important industries not previously represented, particularly the machinery, rayon textile, manufactured food, and chemical industries, all of which have grown rapidly in the past two decades. In addition, a number of individual series, such as those on production of lumber and paper, were replaced by new series or were extensively revised, and adjustments to census or other basic-mark data were made where data for individual industries or groups of industries were inaccurate as to general level.

Another important consequence of the revision is that the new index, being broader in scope and less weighted by primary products, shows less erratic short-term fluctuations.

In making comparisons over longer periods, an important limitation of both the old and the revised indexes arises from the fact that there is no satisfactory method of allowing for the improvement in the quality of products. In many industries, particularly in those with highly fabricated products, increased quantity of output has been accompanied by great improvement in quality.

Methods used in compiling the new index are basically the same as those used in the former index, with a number of changes called for by the passage of time or adopted to simplify the procedure. The base period, in which the index numbers average 100, was shifted from the period 1923-25 to the most recent complete five-year period, 1936-39.

New seasonal adjustment factors were computed for all series, and allowances for change in number of working days were compiled for the new series and revised for old series when necessary.

All revisions were confined to the period from 1936 to date; for the years 1930-32, figures of the old index were chained onto the new series.

The new index and the old index have similar major cyclical movements. They differ principally with respect to long-term growth and to degree of fluctuation in some of the more erratic short-term movements. The similarity shown as to current general level is due largely to the fact that the old index happened to average 99 for the years 1935-39, the base period selected as 100 for the new index. The revised index has shown much more growth over an extended period, rising from an average of 97 in the years 1923-25 to 100 in the new base of 1936-39. In 1937 the new index averaged 8 percent above the 1923 level, whereas the old index averaged 4 percent below 1923. In June 1940 the new index was 121 percent of the 1936-39 average and, if calculated on a 1923-25 basis, would be 126, as compared with 124 for the old index.

The more rapid growth shown by the new index is due to the addition of data for a number of expanding industries not adequately represented in the old index and to adjustments for growth in some series previously used. The widest difference is in the index for nondurable manufactures, and reflects principally the inclusion, for the first time, of series for such rapidly growing industries as chemicals, rayon textiles, alcoholic beverages, dairy products, and certain other manufactured foods, and the improvement of data on pulp and paper. The index of durable manufacturing, shown in the same chart, was also revised upward, though to a smaller extent, largely as a result of the inclusion of new series on machinery and furniture and of special upward adjustments for non-ferrous-metal products and stone, clay, and glass products to allow for the long-term movements of industries not directly represented in these groups. The revised index of minerals differs only slightly from the old mineral index.

The major cyclical movements of the two indexes are broadly similar both in timing and in degree of change. Both indexes rose gradually in the 1920's, with pronounced recessions in 1921 and 1924 and smaller fluctuations in other years, reached a peak in the summer of 1929 and then declined, without important interruption, to a low point in the middle of 1932. This decline was the same for both indexes, amounting to over 40 percent. Both indexes rose, with major interruptions, from 1933 to early 1937, but

in that year the new index reached a new high level of 121, compared with a 1920 peak of 114, while the old index remained below its 1929 peak. The 1937-38 recession and the recovery since were equally pronounced for both indexes.

The new index shows smaller short-term fluctuations and is generally somewhat smoother in month-to-month changes than the old. The peaks in the summer of 1933 and at the end of 1936 and 1939, for example, are less pronounced and the troughs in the autumn months of 1933 and 1936 and the early part of 1935, 1939, and 1940 are also less marked in the new index than in the old. These differences are due largely to an increase in the coverage of the more stable nondurable goods industries and to the inclusion in the new index of new series for the more advanced products of manufacture, such as machinery and furniture. The old index was largely composed of basic products the output of which fluctuates more widely than that for the industry as a whole. Also, for some series, in which shipments or deliveries of materials are used to represent production in later stages of manufacture, a 3-month moving average has been used, and in a few cases, such as shipbuilding and production of locomotives, estimates of the current volume of work have been substituted for more highly fluctuating series on the number of units completed. Another factor smoothing out month-to-month fluctuations in the index has been the revision of seasonal adjustments; this has been particularly important in eliminating or reducing the December peaks, shown in the old index during most recent years.

The extent of the change in composition of the new index as compared with the old is indicated in the following table, in which the basic individual series in the revised index are classified as to whether they are new, materially revised, or substantially the same as in the old index.

Series Included in Revised Index of Industrial Production

New series not in old index	Materially revised from series in old index	Substantially the same as series in old index
Machinery. Aircraft. Railroad cars. Copper deliveries. Lead shipments. Zinc shipments. Furniture. Common brick. Face brick. Glass containers. Rayon deliveries. Manufactured dairy products (4 series). Other manufactured foods. Alcoholic beverages (4 series). Chloroform. Rubber consumption. Gold.	Locomotives. Shipbuilding. Copper smelting. Lumber. Silk deliveries. Carpet wool consumption. Apparel wool consumption. Wool. Woolen yarn. Worsted yarn. Woolen and worsted cloth. Wheat flour. Cane sugar meltings. Meat packing (4 series). Pulp (4 series). Paper (5 series). Paperboard containers. Copper mining. Lead.	Pig iron. Steel ingots. Automobiles. Tin deliveries. Cement. Polished plate glass. Cotton consumption. Leather tanning (3 series). Sheas. Tobacco products (4 series). Newspaper. Newspaper consumption. Petroleum refining (4 series). Coke (2 series). Rubber tires. Rubber tubes. Bituminous coal. Anthracite. Crude petroleum. Iron ore shipments. Zinc. Silver.

All principal groups of industries in manufacturing and in mining are directly represented in the new index at some stage in the production process, whereas in the old index a number of important industries, notably those producing machinery and chemicals, were represented inadequately or not at all. In some cases, the increased coverage was obtained by including new production or shipments series that have become available in recent years; in others, estimates were made on the basis of hours of work or other data, with necessary special adjustments.

The pattern of seasonal variation in the new composite unadjusted index is substantially different from that in the old index, chiefly as a result of the inclusion of new series, particularly those for manufactured foods. One result, as the following table indicates, is that a larger proportion of the year's production is shown in the latter half of the year and a smaller proportion in the first half.

For series included in both the old and the new indexes the seasonal factors are in some cases considerably different, particularly in recent years. In a number of series, for example, seasonal factors formerly used for December were found to be too low and the higher factors now used contribute toward making the new seasonally adjusted index for that month lower than the old index in relation to other months in the autumn and winter.

Seasonal Variation in 1939 in Index of Total Industrial Production¹

Month	New Index	Old Index	Month	New Index	Old Index
January.....	98.2	99.1	July.....	98.4	99.8
February.....	98.1	100.8	August.....	98.8	99.3
March.....	98.6	102.6	September.....	100.0	100.7
April.....	100.8	102.6	October.....	103.7	102.7
May.....	101.4	102.7	November.....	101.7	100.1
June.....	100.0	100.2	December.....	98.3	93.8

¹ Derived by dividing monthly indexes without seasonal adjustment by corresponding seasonally adjusted indexes.

Table 31.—INDEXES OF INDUSTRIAL PRODUCTION¹

(1925-39 average—100)

Month	Without adjustment for seasonal variation																					
	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
Industrial production, combined index																						
Manufactures, combined index																						
Durable manufactures, combined index																						
Nondurable manufactures, combined index																						
Minerals, combined index																						
January.....	70	80	67	82	82	82	82	87	81	93	91	103	96	75	82	84	80	81	112	82	98	117
February.....	87	81	88	88	85	85	80	80	97	95	108	100	70	82	82	81	81	115	82	99	112	
March.....	88	81	88	70	88	88	88	90	100	97	110	98	82	84	82	84	84	130	84	108	112	
April.....	87	78	55	87	91	84	88	85	97	97	113	100	82	88	80	81	84	100	122	85	111	
May.....	88	78	55	87	91	84	88	85	95	95	116	99	82	88	80	81	84	103	126	81	116	
June.....	72	80	57	74	88	77	89	86	97	98	115	95	76	85	79	88	86	103	120	81	102	
July.....	75	77	58	72	89	74	89	83	93	97	112	98	76	82	84	81	85	109	118	85	103	
August.....	77	77	58	72	89	74	89	83	93	97	114	97	74	82	81	85	87	108	120	80	103	
September.....	77	75	60	77	89	82	92	87	97	105	117	98	78	82	80	82	84	108	125	85	103	
October.....	77	74	63	83	88	85	96	93	103	106	114	104	80	82	82	84	84	111	116	88	125	
November.....	75	67	62	88	88	88	90	93	97	101	105	98	97	88	88	88	88	93	119	87	129	
December.....	70	69	57	82	88	88	93	96	97	99	99	98	93	86	86	87	94	114	85	100	124	
Annual Index.....	78	75	68	73	83	81	91	96	95	99	110	91	76	86	81	80	87	103	113	86	106	
January.....	70	80	65	81	81	82	82	88	92	91	94	106	95	74	81	87	79	81	113	79	97	117
February.....	88	83	65	84	85	84	84	96	98	98	109	101	82	82	86	86	86	117	83	100	114	
March.....	87	83	64	79	88	88	97	98	108	113	101	82	82	86	86	86	121	83	100	112		
April.....	88	77	64	79	88	88	98	98	108	113	106	82	82	86	86	86	125	83	100	115		
May.....	89	80	65	74	91	91	98	98	106	116	103	99	82	82	86	86	86	126	84	100	116	
June.....	73	75	60	77	90	71	88	98	98	105	117	95	78	82	82	84	84	106	84	104	117	
July.....	74	74	64	78	88	71	97	98	98	112	112	87	74	82	82	82	82	118	85	103	119	
August.....	77	75	57	73	88	77	98	97	98	102	113	88	78	82	82	82	82	107	82	100	116	
September.....	78	74	65	76	87	81	92	100	98	106	116	98	82	82	82	82	82	106	84	104	116	
October.....	75	71	62	83	88	88	98	100	98	106	114	98	88	88	88	88	88	112	88	108	120	
November.....	77	63	63	84	88	88	98	98	103	103	103	98	81	81	81	81	81	115	88	105	117	
December.....	71	68	46	81	88	79	98	98	98	99	99	98	78	81	81	81	81	115	88	105	123	
Annual Index.....	78	76	68	74	88	81	98	96	95	100	110	91	76	87	86	87	87	113	87	101	117	
January.....	84	83	68	86	104	96	108	114	107	117	133	98	88	91	91	91	108	128	78	108	125	
February.....	84	83	68	86	104	96	108	114	107	117	133	98	88	91	91	91	108	128	78	108	125	
March.....	84	83	68	86	104	96	108	114	107	117	133	98	88	91	91	91	108	128	78	108	125	
April.....	84	83	68	86	104	96	108	114	107	117	133	98	88	91	91	91	108	128	78	108	125	
May.....	84	83	68	86	104	96	108	114	107	117	133	98	88	91	91	91	108	128	78	108	125	
June.....	84	83	68	86	104	96	108	114	107	117	133	98	88	91	91	91	108	128	78	108	125	
July.....	84	83	68	86	104	96	108	114	107	117	133	98	88	91	91	91	108	128	78	108	125	
August.....	84	83	68	86	104	96	108	114	107	117	133	98	88	91	91	91	108	128	78	108	125	
September.....	84	83	68	86	104	96	108	114	107	117	133	98	88	91	91	91	108	128	78	108	125	
October.....	84	83	68	86	104	96	108	114	107	117	133	98	88	91	91	91	108	128	78	108	125	
November.....	84	83	68	86	104	96	108	114	107	117	133	98	88	91	91	91	108	128	78	108	125	
December.....	84	83	68	86	104	96	108	114	107	117	133	98	88	91	91	91	108	128	78	108	125	
Annual Index.....	84	83	68	86	104	96	108	114	107	117	133	98	88	91	91	91	108	128	78	108	125	
January.....	69	78	72	88	92	98	98	104	93	105	98	79	85	85	85	85	85	85	85	85	109	
February.....	59	72	67	76	87	92	98	98	106	91	107	95	77	85	85	85	85	85	85	85	102	
March.....	67	70	63	82	88	85	93	93	103	94	98	95	77	85	85	85	85	85	85	85	105	
April.....	61	68	61	77	88	85	93	93	107	98	97	95	75	85	85	85	85	85	85	85	101	
May.....	70	80	68	89	100	86	97	94	100	97	108	97	80	85	85	85	85	85	85	85	111	
June.....	77	88	68	88	105	88	97	101	100	97	107	98	85	85	85	85	85	85	85	85	121	
July.....	82	88	65	87	106	98	98	103	94	97	111	95	85	85	85	85	85	85	85	85	121	
August.....	77	81	66	83	106	99	104	106	104	103	118	98	85	85	85	85	85	85	85	85	121	
September.....	82	87	67	73	101	94	98	102	104	107	119	98	85	85	85	85	85	85	85	85	121	
October.....	80	86	73	78	100	96	98	104	104	104	114	98	85	85	85	85	85	85	85	85	121	
November.....	68	80	66	81	101	92	92	114	97	109	108	98	85	85	85	85	85	85	85	85	121	
December.....	65	81	69	88	98	97	98	105	99	101	101	98	85	85	85	85	85	85	85	85	121	
Annual Index.....	71	83	66	71	98	96	94	96	100	99	107	93	86	86	86	86	86	86	86	86	106	

^a Preliminary.

¹ New index compiled by the Board of Governors of the Federal Reserve System, Division of Research and Statistics, based on 81 individual monthly series directly representing all principal groups of industries in manufacturing and mining. Some of the series are actual units of physical production, or volume of consumption or shipments of materials; others, covering industries for which units of volume are not available, represent production estimates based on man-hours or machinery activity adjusted, respectively, for changes in output per man-hour and for long-term changes in machinery efficiency. In many instances, series are corrected to trends indicated by Census or other bench-mark data. Each series is adjusted for differences in the number of working days in the month, where necessary, and is then converted into relatives in terms of the

(Footnote continued on p. 13.)

Table 31.—INDEXES OF INDUSTRIAL PRODUCTION—Continued

(1935-39 average=100)

Month	With adjustment for seasonal variation																		
	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948
Industrial production, combined index																			
January	71	63	59	63	65	50	50	56	57	56	106	100	78	66	58	72	53	66	116
February	68	62	57	56	56	55	55	56	57	56	106	100	79	68	57	75	55	69	117
March	65	51	46	49	50	50	50	50	50	50	100	98	81	62	54	70	55	54	120
April	67	56	46	47	51	53	50	54	57	56	110	98	90	58	50	52	50	50	117
May	67	56	47	50	50	50	50	54	57	56	112	96	96	58	50	52	50	50	114
June	72	50	47	74	61	77	55	57	57	56	114	96	78	54	54	72	54	54	121
July	75	50	48	74	50	75	51	56	58	56	114	99	76	56	56	72	56	56	121
August	77	51	48	72	53	78	50	57	58	56	112	97	74	54	53	72	57	57	121
September	75	54	50	70	57	81	52	56	54	52	102	95	70	58	50	70	50	50	119
October	76	52	51	52	52	52	50	52	52	50	104	90	60	58	50	52	50	50	119
November	74	50	51	52	52	52	50	52	52	50	106	90	51	57	50	52	50	50	119
December	70	52	51	52	52	52	50	52	52	50	107	100	79	54	52	52	50	50	120
Manufactures, combined index																			
January	78	22	55	62	53	54	56	55	56	56	108	100	78	64	50	70	56	54	123
February	68	22	55	63	55	50	50	50	50	50	100	90	79	52	48	54	51	51	116
March	65	20	53	54	57	55	50	50	50	50	105	98	80	50	46	54	50	50	112
April	67	20	53	55	55	53	50	50	50	50	101	95	86	50	45	53	50	50	110
May	67	20	55	56	56	55	50	50	50	50	101	95	86	50	45	53	50	50	114
June	72	20	55	56	56	55	50	50	50	50	105	98	77	53	50	53	50	50	121
July	75	20	55	56	56	55	50	50	50	50	105	98	75	51	50	53	50	50	121
August	76	20	57	56	56	55	50	50	50	50	101	94	76	53	50	53	50	50	120
September	75	21	56	54	54	53	50	50	50	50	102	93	73	50	48	53	50	50	115
October	73	20	56	54	54	53	50	50	50	50	104	94	72	50	48	53	50	50	115
November	75	20	56	54	54	53	50	50	50	50	106	95	70	50	48	53	50	50	124
December	75	20	56	55	54	53	50	50	50	50	106	95	70	50	48	53	50	50	126
Durable manufactures, combined index																			
January	95	97	95	65	95	103	105	116	110	118	131	118	77	52	36	59	77	94	127
February	100	60	60	98	100	105	114	112	110	110	114	114	77	48	37	60	68	127	123
March	98	59	59	103	105	106	113	113	110	112	115	115	79	45	33	71	95	126	118
April	97	59	59	107	100	104	113	111	113	115	134	110	77	43	30	74	78	108	123
May	93	51	53	108	101	105	114	111	112	112	120	117	76	42	38	74	74	107	113
June	97	49	51	109	105	105	116	108	116	116	141	109	76	40	38	76	76	110	122
July	95	49	51	108	105	105	116	107	116	116	141	106	76	40	38	76	76	110	121
August	94	50	51	104	99	102	116	106	118	118	140	93	76	34	33	69	66	114	120
September	90	50	51	102	99	102	116	103	118	118	137	99	76	34	33	69	66	115	118
October	94	50	51	102	99	102	116	101	118	118	131	94	76	34	33	69	66	115	118
November	94	50	51	102	99	102	116	101	118	118	131	94	76	34	33	69	66	115	118
December	94	50	51	102	99	102	116	101	118	118	131	94	76	34	33	69	66	115	118
Non-durable manufactures, combined index																			
January	55	69	47	63	71	70	76	75	83	90	90	89	70	78	71	80	68	111	104
February	53	68	49	62	73	70	76	75	82	83	90	89	70	78	71	82	69	110	104
March	53	67	52	63	74	70	76	75	83	83	90	89	70	78	72	83	64	113	104
April	57	66	54	61	75	69	74	74	83	83	90	89	70	78	74	84	65	113	107
May	61	66	54	64	75	68	74	74	83	83	90	89	70	78	74	84	65	113	107
June	63	66	57	75	68	75	78	78	85	84	90	89	70	78	74	84	65	116	106
July	61	66	57	75	68	75	78	78	85	84	90	89	70	78	74	84	65	116	106
August	64	66	57	75	68	75	78	78	85	84	90	89	70	78	74	84	65	116	106
September	66	66	57	71	69	70	76	75	82	81	87	86	70	78	76	82	66	104	106
October	67	66	57	70	69	71	77	76	82	81	87	86	70	78	76	82	66	104	106
November	68	67	61	70	66	73	78	77	83	82	87	86	70	78	76	82	66	104	106
December	67	67	61	70	66	73	78	77	83	82	87	86	70	78	76	82	66	104	106
Minerals, combined index																			
January	78	68	70	73	92	94	94	95	100	96	104	103	82	70	66	76	84	95	105
February	65	70	73	70	93	95	91	90	107	94	110	106	80	69	59	70	65	104	114
March	62	61	67	65	92	94	93	92	106	94	108	104	81	72	65	72	65	103	117
April	66	60	67	65	90	92	91	90	106	94	108	104	81	72	65	72	65	103	117
May	60	70	68	65	90	92	90	90	106	94	108	104	81	72	65	72	65	103	117
June	60	70	68	65	90	92	90	90	106	94	108	104	81	72	65	72	65	103	117
July	71	68	66	65	100	94	90	90	106	94	108	104	81	72	65	72	65	103	117
August	75	68	63	63	93	90	97	100	106	94	108	104	81	72	65	72	65	103	117
September	73	65	64	63	92	90	99	104	106	94	108	104	81	72	65	72	65	103	117
October	79	70	63	63	90	90	96	102	106	94	108	104	81	72	65	72	65	103	117
November	81	66	64	63	90	90	96	102	106	94	108	104	81	72	65	72	65	103	117
December	72	68	64	63	90	90	96	102	106	94	108	104	81	72	65	72	65	103	117

(Continued from p. 12)

average of the base period 1935-39 as 100. In constructing the seasonally adjusted indexes, the relatives for each series are adjusted for seasonal variations by the ratio to free-hand curve method which is discussed briefly in the Federal Reserve Bulletin for October 1938. The seasonal factors reflect changes from time to time in the seasonal pattern.

In compiling the composite indexes (both adjusted and unadjusted for seasonal variations), for industries, groups of industries, and for industrial production as a whole, the individual series are weighted according to their relative importance as measured by the value added by manufacturers shown in the Census of Manufactures and by the value of production for minerals shown in the Mineral Yearbook. In order to give representation to manufacturing industries for which no monthly data are available, each series used is weighted not only according to its own relative importance, but also to some extent for that of the group of industries which it represents in the index. To allow for shifts in the relative importance of the various industries since 1935-39, weights derived from data for 1935 and from data for 1937 were used in computing composite indexes for the period 1935-39 being thus obtained with both 1935 and 1937 weights. Indexes with 1937 weights were then chained to the index with 1935 weights for extending the series back to 1935. For the years 1935 to 1932, figures from the old index on a 1935-39 base were chained to the new series.

The Federal Reserve Bulletin for August 1940 contains a more complete description of the index, together with monthly indexes for each of the 81 series and for industry groups and subgroups, beginning with 1935 where available. Extracts from an article on the new indexes that appears in this bulletin are presented on p. 1

Table 31.—INDEXES OF INDUSTRIAL PRODUCTION—Continued

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Table 31.—INDEXES OF INDUSTRIAL PRODUCTION—Continued

(1935-39 average=100)

Year and Month	With adjustment for seasonal variation																			
	Durable manufactures										Non-durable manufactures									
	Number and products					Stone, clay, and glass products					Transportation equipment					Leather and products				
	Iron and steel	Combination index	Furniture	Number	Machinery	Manufactures metals	Cement	Common stone face brick	Glass containers	Polished plate glass	Automobiles	Locomotives	Railroad cars	Shipbuilding	Aleoholic beverages	Openkates	Combined index	Bevery products	Manufactured food products	
1923 annual index	110	143	89	160	86	90	57	129	262	—	105	582	228	86	—	57	56	50	75	121
1924 annual index	119	139	100	165	91	93	51	140	245	—	95	230	212	74	—	51	51	51	77	121
1925 annual index	115	143	113	169	96	104	103	101	271	—	111	202	180	76	—	55	55	55	85	110
1926 annual index	117	145	120	164	99	113	105	154	209	93	112	225	171	73	—	57	57	57	88	112
1927 annual index	109	144	126	165	98	108	106	161	257	94	89	206	149	63	—	56	56	56	85	113
1928 annual index	124	142	124	151	101	115	110	145	241	72	126	124	122	76	—	58	58	58	88	113
1929 annual index	125	148	128	152	120	126	110	168	263	75	124	122	120	78	—	58	58	58	88	115
1930 annual index	118	126	76	110	105	108	98	101	171	71	62	87	148	73	—	54	54	54	85	109
1931 annual index	55	63	54	49	43	52	27	73	39	59	50	42	42	40	—	75	75	75	79	106
1932 annual index	53	61	60	64	52	53	51	54	49	50	50	42	42	40	—	75	75	75	79	106
1933 annual index	55	63	60	64	52	53	51	54	49	50	50	42	42	40	—	75	75	75	79	106
1934 annual index	52	61	61	58	56	52	51	53	49	50	50	42	42	40	—	75	75	75	79	106
1935 annual index	52	55	53	53	52	52	51	53	49	50	50	42	42	40	—	75	75	75	79	106
1936																				
January	88	88	90	104	24	96	81	72	76	98	119	108	60	112	60	93	102	100	92	96
February	87	86	89	99	24	94	83	79	76	92	108	91	68	94	58	91	91	91	92	92
March	91	97	99	101	24	94	96	96	96	93	115	106	67	110	71	100	94	94	95	100
April	107	98	91	99	24	94	96	96	96	93	111	105	72	115	88	104	93	93	95	96
May	118	103	97	107	104	102	101	107	95	95	113	79	117	88	101	96	96	96	97	103
June	119	105	103	106	106	102	102	103	102	102	115	80	120	95	107	97	97	97	97	107
July	123	109	108	107	102	104	103	106	98	98	124	115	80	120	95	107	97	97	97	107
August	128	112	107	105	103	104	114	111	104	108	128	123	101	118	115	104	104	104	104	111
September	134	110	115	108	106	110	116	113	104	106	126	119	94	106	105	107	107	107	107	107
October	126	113	119	112	108	112	114	120	109	108	125	95	97	116	118	112	112	112	113	113
November	123	111	124	104	117	118	114	123	122	107	111	123	91	113	127	103	103	103	113	113
December	137	114	123	109	123	123	111	124	111	91	121	121	101	125	124	111	111	111	114	114
Annual index	114	105	106	105	106	104	105	106	105	105	115	111	79	116	97	108	98	98	97	105
1937																				
January	142	111	127	108	123	126	116	129	115	115	146	123	103	147	149	100	111	119	122	102
February	137	113	126	107	126	120	129	134	117	116	146	123	108	148	104	107	111	118	103	103
March	128	117	124	107	125	124	124	142	118	117	128	126	114	126	155	113	119	114	116	103
April	139	125	127	113	129	127	129	129	129	129	129	129	129	129	129	115	115	115	120	103
May	145	124	127	122	128	126	120	105	127	121	124	128	116	128	127	111	114	116	114	104
June	125	125	127	122	122	123	122	120	122	123	127	127	117	129	121	110	114	112	112	102
July	124	126	126	126	126	127	127	126	126	126	127	127	117	127	127	106	106	106	106	106
August	128	123	123	123	123	123	127	127	127	127	127	127	127	127	127	106	106	106	106	106
September	131	113	111	111	113	114	114	114	114	114	127	127	101	127	127	103	103	103	103	103
October	131	113	110	111	111	111	114	117	118	118	123	123	101	123	123	103	103	103	103	103
November	108	105	109	103	116	116	107	108	106	106	104	125	91	104	204	97	101	101	101	95
December	47	55	59	63	103	97	97	97	97	97	98	101	78	175	113	98	101	73	69	103
Annual index	139	133	117	111	126	125	114	114	113	114	127	126	104	126	123	103	103	103	103	94
1938																				
January	65	21	20	31	21	29	21	22	22	21	74	74	162	66	128	112	106	101	105	111
February	65	21	22	22	22	22	22	22	22	22	74	74	162	66	103	104	104	105	106	106
March	65	29	22	22	22	22	22	22	22	22	74	74	162	66	126	97	97	97	97	106
April	52	21	25	25	25	25	25	25	25	25	74	74	162	66	126	97	97	97	97	106
May	41	21	21	21	21	21	21	21	21	21	74	74	162	66	126	97	97	97	97	106
June	49	22	22	22	22	22	22	22	22	22	74	74	162	66	126	97	97	97	97	106
July	43	24	24	24	24	24	24	24	24	24	74	74	162	66	126	97	97	97	97	106
August	73	64	63	67	67	70	67	67	67	67	74	74	162	66	126	97	97	97	97	106
September	79	64	63	67	67	71	68	68	68	68	74	74	162	66	126	97	97	97	97	106
October	92	65	65	65	65	65	65	65	65	65	74	74	162	66	126	97	97	97	97	106
November	104	65	64	64	64	64	64	64	64	64	74	74	162	66	126	97	97	97	97	107
December	97	123	99	105	105	101	101	101	101	101	74	74	162	66	126	97	97	97	97	106
Annual index	68	99	97	99	99	99	99	99	99	99	74	74	162	66	126	97	97	97	97	106
1939																				
January	98	108	99	109	92	96	108	107	112	101	99	106	113	102	57	32	108	101	105	106
February	107	100	101	101	96	94	104	104	101	101	101	102	101	49	32	108	100	105	103	
March	92	97	99	96	94	94	104	104	107	101	99	102	101	49	32	108	102	105	106	
April	96	106	99	101	98	95	105	107	111	101	102	106	106	49	32	108	102	105	106	
May	92	103	102	102	98	95	104	104	107	101	102	106	106	49	32	108	102	105	106	
June	94	104	106	101	101	103	103	103	103	103	103	103	103	49	32	108	102	105	104	
July	103	104	106	101	101															

Table 31.—INDEXES OF INDUSTRIAL PRODUCTION—Continued

(1935-39 average=100)

Year and Month	Without adjustment for seasonal variation														
	Measurable manufactures—Continued										Minerals				
	Paper and products			Petroleum and coal products		Textiles and products					Fuels		Metals		
	Combined Index	Paper and pulp	Petroleum and coal	Combined Index	Petroleum products	Combined Index	Cotton cloth	Other textile	Silk	Wool	Combined Index	Anthracite	Bituminous coal	Crude petroleum	Lead
1922 annual index.....	58	65	74	118	68	83	102	104	89	111	94	183	143	68	115
1923 annual index.....	61	67	79	97	62	72	94	95	85	95	97	122	133	61	127
1924 annual index.....	66	73	84	112	70	82	106	108	96	106	97	121	130	66	126
1925 annual index.....	72	79	92	108	78	88	102	104	98	102	98	120	129	74	125
1926 annual index.....	72	79	92	108	78	88	102	104	98	102	98	120	129	74	125
1927 annual index.....	74	80	94	117	80	92	106	108	100	102	102	120	129	77	124
1928 annual index.....	78	84	94	123	87	95	110	112	102	104	103	120	129	80	123
1929 annual index.....	85	90	104	109	90	98	106	108	102	104	103	120	129	81	122
1930 annual index.....	78	84	94	114	86	95	102	104	98	100	98	119	128	78	121
1931 annual index.....	74	77	89	90	80	85	92	94	88	90	88	116	125	74	120
1932 annual index.....	74	77	89	92	80	85	92	94	88	90	88	116	125	74	120
1933 annual index.....	78	76	74	94	85	82	92	94	88	90	88	116	125	74	120
1934 annual index.....	86	76	88	95	89	85	92	94	88	90	88	116	125	81	121
1935 annual index.....	86	76	88	95	89	85	92	94	88	90	88	116	125	81	121
1936															
January.....	55	57	60	98	56	60	106	102	98	100	99	121	119	59	97
February.....	55	59	62	98	52	56	98	98	92	98	91	121	120	59	97
March.....	55	59	62	98	52	56	98	98	92	98	91	121	120	59	97
April.....	58	64	68	103	58	62	102	97	91	98	95	128	127	64	106
May.....	60	66	70	106	60	64	104	99	93	102	98	128	127	66	106
June.....	60	67	70	106	60	64	104	99	93	102	98	128	127	68	106
July.....	60	64	68	106	60	64	104	99	93	102	98	128	127	68	106
August.....	100	105	91	99	112	105	106	106	100	102	98	129	128	101	101
September.....	105	105	101	106	115	108	112	114	112	112	105	126	125	105	107
October.....	108	107	102	120	108	112	115	112	108	108	105	124	123	108	107
November.....	107	106	103	123	107	112	117	115	112	112	108	123	122	107	109
December.....	109	110	101	104	108	112	121	119	115	115	112	123	122	109	109
Annual index.....	96	94	90	97	110	94	107	104	104	107	99	127	126	94	108
1937															
January.....	112	113	108	103	129	109	122	124	122	122	121	127	126	121	106
February.....	116	118	112	108	129	101	127	128	125	123	122	127	126	124	123
March.....	117	117	115	104	128	108	128	129	126	123	122	128	127	125	125
April.....	120	121	119	108	128	102	124	127	129	123	122	128	127	126	126
May.....	116	119	115	108	128	104	124	125	122	123	122	128	127	124	124
June.....	113	114	114	105	125	106	116	117	119	112	112	120	119	122	124
July.....	110	110	104	101	121	107	114	116	114	112	112	120	119	121	122
August.....	110	111	104	111	124	107	116	116	113	112	112	120	119	121	122
September.....	108	110	114	128	112	104	107	107	100	98	98	115	114	87	120
October.....	101	100	104	110	114	90	97	97	94	97	97	108	116	102	118
November.....	96	94	100	106	111	101	111	112	109	106	104	110	110	106	122
December.....	76	75	98	103	52	69	70	66	72	45	45	88	98	71	108
Annual index.....	107	107	106	109	124	106	104	106	111	97	103	103	125	125	106
1938															
January.....	93	93	94	101	90	80	108	101	70	85	79	108	115	97	104
February.....	90	91	87	90	77	72	85	82	74	85	78	101	104	98	106
March.....	91	92	100	90	88	73	92	87	87	77	73	102	107	98	105
April.....	88	88	98	98	87	85	98	98	85	85	82	104	106	88	104
May.....	88	88	97	97	92	91	98	97	75	87	82	105	106	88	104
June.....	98	97	95	95	94	92	98	97	75	87	82	105	106	98	104
July.....	98	95	95	95	97	92	98	97	80	85	78	106	107	98	104
August.....	101	101	96	100	71	71	104	97	83	118	92	107	107	96	104
September.....	105	104	103	103	79	79	106	94	91	105	98	108	109	105	108
October.....	106	105	104	104	89	87	107	105	102	106	103	109	109	106	108
November.....	104	104	104	104	107	105	107	105	102	106	103	109	109	104	106
December.....	100	101	100	103	96	104	107	103	103	107	102	109	109	105	106
Annual index.....	95	95	96	100	77	78	93	94	88	91	88	106	106	95	106
1939															
January.....	103	103	97	104	96	100	110	107	108	110	98	111	109	79	114
February.....	107	108	103	103	96	104	112	110	117	106	113	104	104	104	108
March.....	106	108	103	103	96	104	110	107	108	110	103	104	104	104	108
April.....	108	108	106	106	98	106	107	106	114	108	106	106	106	104	108
May.....	104	104	103	103	98	109	101	103	103	111	87	109	108	102	108
June.....	103	105	106	101	111	108	104	101	120	117	108	109	109	101	105
July.....	104	101	99	107	98	108	107	106	104	122	105	103	102	98	102
August.....	111	109	98	111	104	112	106	105	105	120	105	112	112	104	105
September.....	126	121	121	114	116	114	124	116	117	146	88	122	121	112	111
October.....	128	122	122	121	126	121	126	121	125	145	98	122	121	116	110
November.....	123	121	116	121	115	122	120	121	120	142	101	120	120	116	116
December.....	128	128	128	118	140	115	118	125	125	150	84	128	124	118	124
Annual index.....	114	113	100	110	105	111	118	110	125	111	91	108	106	123	110
1940															
January.....	120	122	106	116	128	122	122	124	147	72	107	98	120	122	114
February.....	116	118	100	116	128	122	123	123	140	65	103	98	116	117	108
March.....	114	111	114	114	120	120	121	114	131	99	77	104	114	114	116
April.....	119	120	116	116	114	114	119	119	120	98	70	106	114	115	121
May.....	120	122	118	118	122	118	117	117	120	107	61	104	120	120	118

Table 31.—INDEXES OF INDUSTRIAL PRODUCTION—Continued

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Year and Month	Nonferrous manufactures—Continued													Minerals				
	Paper and products			Petroleum and coal products			Textiles and products				Fuels		Metals					
	Combined index	Paper and pulp	Printing and publishing	Combined index	Coke	Petroleum refining	Bubber products	Combined index	Cotton consumption	Spun cotton	Wool textile production	Combined index	Anthracite	Bituminous coal	Combined index	Copper	Lead	Zinc
1923 annual index	58	55	74	58	118	56	53	56	52	54	111	54	52	152	53	118	141	105
1923 annual index	52	57	79	57	97	58	51	58	50	58	97	55	55	173	61	127	143	100
1925 annual index	55	53	84	55	118	55	55	54	50	58	98	55	56	121	55	120	135	111
1925 annual index	52	55	82	52	120	52	52	52	50	51	121	55	55	144	56	140	174	129
1927 annual index	74	70	93	75	112	70	68	70	68	71	131	75	77	180	77	120	170	121
1928 annual index	70	68	98	77	124	70	68	72	68	72	136	70	70	146	70	124	164	123
1929 annual index	56	52	104	56	140	56	50	56	50	56	106	55	55	144	55	134	169	124
1930 annual index	70	64	97	59	114	70	68	70	68	70	137	70	70	136	70	111	148	120
1931 annual index	74	77	88	80	90	80	72	78	71	75	143	75	75	147	75	104	142	120
1932 annual index	65	66	74	62	52	52	54	54	50	51	131	50	50	140	50	58	124	54
1933 annual index	70	78	25	74	65	75	75	77	75	75	112	75	75	145	75	21	124	54
1934 annual index	75	75	90	78	76	75	75	75	75	75	112	75	75	146	75	25	124	54
1935 annual index	80	86	88	88	84	86	86	83	84	84	115	85	85	147	85	34	124	82
1936																		
January	87	87	93	91	98	92	84	91	90	97	91	104	94	94	107	91	90	94
February	87	87	94	91	93	93	85	93	92	97	92	100	95	95	110	90	90	94
March	87	87	96	95	104	95	87	95	95	97	95	100	96	96	112	92	92	96
April	91	91	98	95	104	95	88	95	95	97	95	101	96	96	108	93	93	98
May	95	97	97	95	108	95	94	95	95	97	95	105	96	96	115	95	95	104
June	97	98	97	95	110	95	95	95	95	97	95	100	95	95	102	95	95	110
July	99	99	96	95	110	95	94	95	95	97	95	100	95	95	105	95	95	112
August	103	103	99	98	113	95	95	95	95	97	95	101	95	95	108	95	95	104
September	103	103	100	100	116	95	95	95	95	97	95	103	95	95	107	95	95	104
October	104	103	101	101	120	95	95	95	95	97	95	104	95	95	108	95	95	104
November	105	105	110	101	123	95	95	95	95	97	95	105	95	95	112	95	95	104
December	113	115	110	104	127	95	95	95	95	97	95	107	95	95	124	95	95	104
Annual index	99	99	99	97	110	95	95	107	95	98	95	104	95	95	107	95	95	104
1937																		
January	116	114	111	105	128	101	115	121	122	111	117	120	103	104	114	101	116	108
February	112	113	111	107	125	103	120	121	122	112	118	125	103	107	113	106	116	113
March	113	113	109	107	123	103	118	125	124	113	119	125	103	107	113	106	117	113
April	117	118	107	104	124	102	118	125	124	117	119	125	101	107	110	104	117	113
May	110	120	115	108	126	104	117	125	126	112	123	126	101	107	108	104	116	120
June	114	115	118	107	125	104	113	123	125	113	121	125	101	109	110	106	122	124
July	114	115	114	110	125	106	108	115	118	105	105	105	103	106	103	111	123	124
August	111	112	112	120	106	105	105	105	105	105	98	104	106	106	107	114	101	120
September	102	106	114	120	110	102	102	102	102	102	97	102	102	102	102	107	124	124
October	97	97	105	112	116	101	97	105	105	97	97	106	102	102	113	117	124	124
November	99	98	96	108	97	104	95	95	95	95	95	101	100	100	103	113	121	124
December	79	78	97	104	83	103	95	95	95	95	95	107	102	102	118	111	118	116
Annual index	103	107	106	103	124	105	104	105	111	97	103	105	100	101	115	107	124	116
1938																		
January	95	94	87	103	98	107	93	93	95	95	95	95	95	103	102	87	100	101
February	93	93	86	105	99	105	94	94	95	95	95	95	95	107	105	93	93	98
March	93	90	86	105	99	105	93	93	95	95	95	95	95	104	104	91	91	96
April	97	90	84	105	107	102	98	102	102	95	95	95	95	107	105	90	90	97
May	95	88	91	97	95	91	95	95	95	95	95	95	95	101	94	87	92	95
June	93	93	90	90	95	91	95	95	95	95	95	95	95	95	95	95	95	95
July	100	96	96	96	99	95	95	95	95	95	95	95	95	95	95	95	95	95
August	102	92	87	95	71	103	85	85	85	85	85	85	85	71	71	85	78	79
September	103	102	96	101	79	104	93	93	95	95	95	95	95	105	105	92	92	95
October	105	106	101	103	95	106	98	98	98	98	98	98	98	106	105	95	95	98
November	105	106	102	105	97	108	100	100	100	100	100	100	100	107	105	97	97	98
December	106	106	98	103	95	106	105	105	105	105	105	105	105	106	106	98	98	102
Annual index	104	98	96	104	77	104	93	95	95	95	95	95	95	75	102	90	90	94
1939																		
January	105	104	100	100	96	108	105	107	107	105	105	108	108	103	103	97	113	114
February	105	104	103	105	97	108	105	105	105	105	105	105	105	101	103	100	105	106
March	106	105	107	107	98	108	105	105	105	105	105	105	105	104	104	98	105	106
April	105	105	105	105	98	108	105	105	105	105	105	105	105	104	104	98	105	106
May	104	104	107	107	91	105	105	105	105	105	105	105	105	104	104	98	105	106
June	105	107	109	109	98	107	107	107	107	107	107	107	107	104	104	98	105	106
July	107	109	109	109	98	107	107	107	107	107	107	107	107	104	104	98	105	106
August	112	110	105	110	104	112	111	111	114	114	114	114	114	108	108	90	108	108
September	111	111	112	112	112	112	112	112	112	112	112	112	112	107	107	115	112	112
October	111	112	112	112	113	118	115	115	115	115	115	115	115	111	111	117	112	112
November	112	112	110	110	117	117	115	115	115	115	115	115	115	110	110	117	112	112
December	114	114	119	120	116	116	120	120	120	120	120	120	120	118	118	124	112	112
Annual index	114	115	109	110	105	111	113	113	113	113	113	113	113	110	110	118	116	106
1940																		
January	123	123	106	117	107	114	119	117	120	151	105	108	108	103	117	111	127	114
February	114	114	106	118	122	115	119	106	143	84	105	105	105	103	113	106	140	116
March	110	110	105	118	117	115	115	109	128	84	105	105	105	103	114	106	141	117
April	115	110	106	116	119	114	116	109	126	84	105	105	105	103	115	106	142	118
May	125	127	115	114	123	117	117	117	117	117	117	117	117	117	117	117	143	124
June	123	122	115	115	122	115	115	115	115	115	115	115	115	115	115	117	143	124

→ Preliminary.

Table 32.—WHOLESALE PRICES, CHEMICALS AND ALLIED PRODUCTS¹

(1935=100)

Year	Annual Index	Month	1933	1934	1935	1936	1937	1938	1939	1940
Combined index										
1920	100.0	January	71.5	74.7	77.8	79.8	84.7	79.1	70.1	77.7
1921	98.1	February	71.1	71.6	78.7	78.1	85.2	75.7	75.8	77.6
1922	93.0	March	70.9	75.7	78.6	77.9	86.2	78.2	76.0	77.0
1923	94.0	April	71.1	75.4	78.2	77.4	86.8	77.2	76.5	76.8
1924	88.7	May	72.3	74.8	76.8	75.5	83.1	70.4	75.6	78.7
1925	78.3	June	72.8	74.2	79.1	76.5	82.6	76.0	76.2	70.1
1926	73.9	July	72.7	74.2	77.6	77.7	83.0	76.9	74.6	-----
		August	72.8	74.9	78.6	78.1	81.7	70.7	74.2	-----
		September	72.0	75.4	78.9	78.5	80.9	78.5	74.6	-----
		October	72.2	76.0	79.8	80.1	88.0	76.4	77.6	-----
		November	72.8	75.9	79.7	80.7	79.7	76.1	77.4	-----
		December	75.0	76.4	79.1	82.8	79.1	76.1	77.7	-----
		Annual index	78.1	78.3	78.0	78.7	82.6	77.8	74.4	-----
Chemicals										
1926	100.0	January	87.4	87.4	87.1	89.4	87.7	87.4	86.1	86.3
1927	98.5	February	87.2	87.3	87.2	89.5	88.2	87.3	86.8	88.3
1928	96.6	March	86.6	87.1	87.2	88.7	88.3	87.1	86.8	86.1
1929	96.7	April	86.6	86.6	87.7	88.5	88.7	86.8	86.6	86.0
1930	91.0	May	80.2	87.0	87.9	89.1	88.4	86.1	86.1	86.1
1931	80.2	June	86.9	86.9	88.0	87.9	88.7	86.3	84.6	86.1
1932	88.8	July	88.2	88.1	87.4	88.5	88.5	86.4	86.0	-----
		August	88.2	88.2	89.9	87.0	88.8	86.1	83.8	-----
		September	88.4	88.3	89.8	87.1	87.8	86.1	84.6	-----
		October	88.5	88.6	89.8	87.2	87.7	86.7	86.2	-----
		November	87.2	88.7	89.1	87.0	87.4	86.6	86.3	-----
		December	87.5	88.9	89.8	87.6	87.4	86.4	86.3	-----
		Annual index	88.8	88.8	89.4	87.9	88.8	86.4	86.7	-----
Drugs and pharmaceuticals										
1926	100.0	January	88.3	88.8	76.1	78.8	88.7	79.2	77.9	81.3
1927	85.0	February	83.8	74.2	76.2	78.4	82.1	78.2	77.8	81.3
1928	87.8	March	83.2	74.7	75.2	75.9	82.0	78.0	77.7	81.1
1929	88.8	April	83.9	75.0	77.3	78.8	81.8	78.0	77.4	81.3
1930	88.8	May	83.2	75.4	77.8	78.8	82.0	77.8	77.6	81.0
1931	85.2	June	83.4	75.6	77.9	78.4	82.2	79.4	79.4	81.3
1932	85.0	July	84.9	75.9	77.7	78.2	85.3	80.1	77.2	81.3
		August	84.8	76.7	77.7	78.5	85.2	80.3	77.1	-----
		September	84.8	75.6	77.6	81.3	85.3	80.3	76.4	-----
		October	84.4	76.1	78.6	83.5	85.4	81.2	79.7	-----
		November	84.9	76.0	78.8	84.8	85.4	78.9	79.7	-----
		December	85.0	76.1	78.7	84.8	85.4	78.2	80.3	-----
		Annual index	84.6	74.8	77.6	80.1	85.6	78.8	78.8	-----
Fertilizer materials										
1926	100.0	January	88.8	87.0	88.1	88.9	88.8	88.2	88.2	81.3
1927	95.4	February	88.4	87.9	88.7	88.9	88.1	88.5	87.7	81.0
1928	100.1	March	88.0	88.1	88.8	88.8	88.0	88.1	88.8	80.6
1929	95.6	April	88.1	88.2	88.2	88.7	88.9	88.4	88.1	80.7
1930	87.8	May	88.0	88.1	88.8	88.6	88.3	88.3	88.4	80.6
1931	76.8	June	84.5	81.4	81.3	81.4	88.5	84.2	84.6	87.4
1932	88.7	July	88.6	88.0	88.8	88.6	88.6	88.6	88.3	-----
		August	88.4	88.5	88.6	88.6	88.8	88.5	88.5	-----
		September	88.4	88.3	88.6	88.1	88.1	88.1	87.2	-----
		October	88.1	88.4	88.9	88.6	88.1	88.2	88.6	-----
		November	88.0	88.3	88.1	88.2	88.0	88.5	88.6	-----
		December	88.4	88.7	88.1	87.4	88.8	87.8	80.9	-----
		Annual index	88.9	88.4	88.8	88.2	88.0	87.0	87.8	-----

¹ Revised series. Data are compiled by the U. S. Department of Labor, Bureau of Labor Statistics.

Among the more important phases of the revising were more detailed descriptions of the items included in the index, enlargement of the commodity coverage, reallocation of weighting factors, elimination of unimportant or irrelevant items, changes in certain individual price series to more representative grades of products or types of sale, and transfer of some items to groups under which they more logically belong.

The revised index numbers have been computed by years from 1926 through 1939 and by months from January 1933 to date. Whenever possible, each individual price series was projected back to January 1926. In some instances this could be done only by substituting one price series for another, while in others, individual series were incorporated into the index at a later period. It was necessary to exclude some important items because satisfactory price data were not available.

The March 1940 issue of "Average Wholesale Prices and Index Numbers of Individual Commodities," published by the Bureau of Labor Statistics, lists the items included, with specifications for each. The historical record for the "mixed fertilizers" and "oils and fats" subgroups, not shown separately in the Survey, is also given.